REPLACEMENT PARAGRAPH PAGE 1, 1st PARAGRAPH

~~Description~~

BACKGROUND OF THE INVENTION

Scaffolding plates, planks, or boards are currently manufactured either from massive wood, sheet steel or aluminum, or profiled steel or aluminum, the attempt having been made for many years, in order to save weight, to lay, insert, fit, rivet, screw, glue, weld, or attach in another way thin plywood plates, which have been made weatherproof, in frames manufactured from profiles instead of the profiled sheet metal over the entire length and width.

REPLACEMENT PARAGRAPH PAGE 4, 1st FULL PARAGRAPH

SUMMARY OF THE INVENTION

~~With incorporation of Patent Applications DE 102 14 485.0, 102 15 606.9, 102 16 569.6, 102 17 118.1, 102 21 250.3, 102 25 439.7, 102 26 703.0, 102 40 384.8, 103 00 886.1, and 103 00 888.8, a "light scaffolding plate" is thus represented in this description which,~~ According to the present invention, a light scaffolding plate is provided that, by using plastic honeycomb, foam, or web plates or a mixture thereof with welded, reinforced, or non-reinforced cover layers and hot-molded edge terminuses, ~~provides a light scaffolding plate which~~ already comprises holders and covering structure, which light scaffolding plate almost corresponds in price to the typical wood or steel plank plates, and is completely recyclable without problems, since it is largely produced from a single thermoplastic material or from two materials having melting points significantly deviating from one another, wherein the basic raw materials can be reused.

REPLACEMENT PARAGRAPH PAGE 20, 1st FULL PARAGRAPH

~~Light-weight scaffold board and method for producing the same~~

~~On the drawing~~

BRIEF DESCRIPTION OF THE DRAWINGS

Figure 1 light plate in section

01	top cover layer
02	support core
03	lower cover layer
04	fusing of cover layer/support core
05	downward bevel of edge terminus
06	fusing of edge terminus/cover layer

NEW PARAGRAPHS TO FOLLOW AFTER THE LAST LINE OF PAGE 34

DESCRIPTION OF PREFERRED EMBODIMENTS

A light scaffolding plate to be laid, inserted, fitted, riveted, screwed, glued, welded, or attached in another way in a metal, preferably aluminum frame of a façade or rolling scaffold provided for this purpose or to be suspended directly in a scaffold, in various lengths and widths is provided. The scaffold plate is molded, fitting with one or more of the known scaffold systems, as a sandwich panel from a thermoplastic or duroplastic or a mixture of the two and is provided with a reinforcement.

The upper and/or lower cover layer of the plate is made of reinforced or unreinforced plastic material.

The border or edge terminuses and/or the intermediate webs and/or the frame reinforcements are made of reinforced plastic material, the lower and/or upper cover layer material, and/or the compressed or melted and solidified support core material.

The reinforcement is made of long-fiber and/or short-fiber natural, metal, or artificial fibers, fabrics or nonwoven materials made thereof, which are made of glass, plastic, carbon, or metal or a mixture thereof.

The upper and/or lower cover layer of the plate is a perforated metal plate or film or such a plate or film is embedded in the cover layer.

The upper and/or cover layer of the plate is a sinkhole perforated sheet or film.

The perforated metal plate or film or the sinkhole perforated sheet or film is permanently bonded and anchored bodily by material, which penetrates within the perforations on one side, of a thermoplastic or duroplastic plate or compound made of one or more layers.

The support core between the two cover layers of the plate is made of molded thermoplastic or duroplastic material, such as honeycombs, webs, caps, corrugated profiles, foamed or other spacer shapes, with or without fiber, textile, or nonwoven material reinforcement or solid external and/or intermediate webs.

One or both cover layers, the boundary terminuses, and/or molded-on lateral parts,

suspension and paneling fittings are exclusively made of multilayered thermoplastic material, prepared with highly-oriented reinforcement elements having bidirectional molecular alignment, of identical or similarly high rigidity in strength and do not contain glass fibers or other reinforcements made of non-thermoplastic material and are thus completely recyclable.

The support core between the two cover layers is made of thermoplastic base material, prepared with highly-oriented reinforcement elements having bidirectional molecular alignment, of identical or similar base material having high rigidity in strength and does not contain glass fibers or other reinforcements made of non-thermoplastic material and is thus completely recyclable, even together with cover layers made of the same material.

The thermoplastic support core and/or the cover layers or the material penetrating the perforated sheet on one or both sides are made of Plexiglas (PMMA), thermoplastic polyester (PET/G), polyamide (PA), polycarbonate (PC), polyethylene (PE), polytetrafluoroethylene (PTFE), polypropylene (PP), polyoxymethylene (POM), polyvinyl chloride (PVC) or a mixture of these substances having identical or different melting points.

A duroplastic or duromeric support core and/or duroplastic or duromeric cover layers or the material which penetrates the perforated sheet on one or both sides is made of phenol resin, cresol resin (PF), urea resin (UF), melamine resin (MF), and polyester resin (UP) or a mixture of these substances.

To achieve better strength and rigidity, modulus of elasticity, modulus of bending and creep, hardness, dimensional stability in the heat, tearing and tensile strength, compression resistance, dimensional stability, density, fatigue strength, thermal conductivity, melting viscosity, reduction of stretching, impact toughness, impact strength when notched, creep tendency, shrinkage, thermal expansion, abrasion resistance, UV and weather resistance, and melt flow index, additives which influence these are admixed with the thermoplastic material, such as talcum, wood flour, wollastonite, zinc oxide, metal powder, mica, calcium carbonate, or other suitable substances, or the materials themselves already have different melting points.

The scaffold plate has a suspension, molded onto and/or from the support core and cover layer material, in a known claw shape to be hung in the scaffold structure, which is provided with an upright angled profile or U-profile.

The scaffold plate has a suspension, molded onto and/or molded through compression from the support core and cover layer material in a known claw and/or round groove shape to be hung in the scaffold structure, which is provided with an upright angled profile or U-profile or a round pipe.

The scaffold plate has, alone or in addition to the claw and/or round groove shape, holes to be hung in the scaffold structure, which is provided with corresponding upright pins, the holes being reinforced by hollow rivets made of metal or plastic or by material compression at the hole edges.

The molded suspension is molded uniformly onto the entire plate width or part thereof, such as a half, a third, a quarter, or less.

The molded suspension is molded onto both ends of the plate in a lattice shape for interlocking two plates.

The scaffold plate is inserted or attached as a component in a frame using the suspension shapes described above.

The scaffold plate has no lateral protection edge and/or lateral projection part.

The lateral protection parts are molded onto one or more lateral edges.

The scaffold plate is suitable for a falling weight test, with or without reinforcement, frameless, self-supporting, supporting a full load, and using 100, 150, 200, or 250 kg falling weight in the middle or another location between the suspensions of the plate.

The scaffold plate has a suspension fitting or hole and the required lateral protection part molded on and is stackable.

The scaffold plate has upward and downward bevels in the lateral region over the entire length or parts thereof.

The downward bevels on both sides have identical or different types and/or sizes.

The upward bevel for the lateral protection part in the lateral region is up to 10 cm high.

The upward bevel for the lateral protection part in the lateral region is up to 15 cm high.

The upward bevel for the lateral protection part in the lateral region is up to 100 cm high or is the typical height of a guardrail for falling protection.

The upward bevel for the lateral protection part in the lateral region is up 150 cm high.

The upward bevel for the lateral protection part in the lateral region is in two or three parts and has a total height of up to 350 cm.

The lateral protection part is made of two or three independent parts.

The upward and downward bevels in the lateral region are thermoplastically compressed to other material thicknesses during the beveling and the edges are closed and/or grooves or other connection parts are molded on, which receive an extension of the lateral protection part in height through placement, insertion, or other attachment and hold it in such a way that it is removable and secured against unintentional detachment.

The second and further parts of the lateral protection part are significantly thinner than the part molded onto the plate.

The lateral protection part has large recesses or openings.

The thermoplastic material of the connection and cover layers and the support core, particularly also the lateral protection part, is colorless and transparent to light.

The scaffold plate has a width of 58 to 65, 88 to 95, 118 to 125, or up to 150 cm, calculated with or without the lateral upward bevel.

The scaffold plate has a length of up to approximately 60, 100, 150, 200, 250, 300, 350, or 400 cm.

The scaffold plate or possibly its lateral protection parts may be attached sufficiently securely and removably to the scaffolding using securing pins or other securing devices.

The lateral downward bevel in the region of the suspension on both ends of the plate is used as a displacement guard against the suspension.

The suspension is secured on one or both ends of the plate using a permanently

elastic plastic spring or flap which only opens to pressure.

Over the entire top of the cover layer or at individual points thereof, the scaffold plate has a slip-proof, raised, or depressed texture.

The scaffold plate has a slip-proof, raised, or depressed perforated metal cover layer over the entire top or at individual points thereof.

The perforated metal sheet absorbs the static strain towards sag at the required load on the top and bottom in connection with the support core.

The perforated metal is either aluminum, also admixed with other metals, steel (hot galvanized or aluminized), stainless sheet steel, or other metals or metal composite materials and has either a simple perforation, a sinkhole, slotted bridge, projecting, lapped, or similar perforation or a depressed perforation in this or similar form.

The perforated metal is provided with an additional primer (adhesion promoter) or a color layer toward the support core and/or toward the top or bottom.

The outer cover layer is a metal plate or sheet on top or bottom or on both sides, having stabilizing beads, which are oriented to the cover layer, in the longitudinal direction of the plate.

The outer cover layer is a metal plate or sheet on top or bottom or on both sides, having stabilizing beads, which are oriented to the cover layer, in the transverse direction of the plate.

The external perforated sheet cover layer has unperforated metal strips between the rows of holes in the perforation, particularly in the longitudinal or similar perforation, in the direction of the main load towards sag.

The perforated sheet cover layer is bonded to the plastic bonding layer by enclosing the holes, beads, hooks, or claws, etc. or solely by melting into the upper and/or lower surfaces of the support core.

In the event of sinkhole, slotted bridge, or similar perforations in the perforated sheet, which are positioned on one or both sides of the plate, preferably linearly parallel to the main sag direction upon load of the plate, and may even be offset to one another, the plastic material which penetrates the sheet at the hole locations has multiple

connections, equal to the multiple holes, which are formfitting, similar to rivets or flat rivets, between the perforated sheet and support core, so that a homogeneous connection arises which is distributed over the entire plate area.

In the sinkhole perforation, the sinking of the hole makes up approximately 70, 60, or 50% and the actual hole makes up approximately 50, 40, or 30%.

In the slotted bridge perforation, the longer and narrow side of the slotted bridge runs parallel to the direction of the load towards sag of the plate and makes up approximately 70, 60, 50, 40, or 30% of the sheet area.

In the slotted bridge perforation, the hole and the slotted bridge are implemented as approximately square having rounded corners and the hole size makes up approximately 70, 60, 50, 40, or 30% of the sheet area.

The perforated sheet cover layer is provided over the entire area on one side only on top and is provided with lateral C-shaped, L-shaped, or U-shaped stiffening downward bevels, which completely or partially enclose the support core on the other side.

A plastic, preferably thermoplastic support core, which is enclosed on both sides or all sides, is permanently glued or welded into a pocket-shaped metallic cover layer.

The support core is made of thermoplastic foam having closed pores.

The support core is made of one or more honeycomb plates, with or without honeycomb tubes each closed by a cover layer.

The support core is made of continuously extruded honeycomb plates having flattened, padded tube ends.

The scaffold plate or the lateral projection parts which are molded or placed on has an identification or inscription, also as an advertising text, which is visible over the entire area and/or only through the holes of the perforated sheet cover layer.

The scaffold plate is colored permanently, weather resistant, and UV resistant in the plastic material in one or more colors by choice and/or in the metal cover layer or is provided with a primer/adhesion promoter.

The scaffold plate has a small or large climb-through opening having an inserted flap made of identical material, which is connected to the plate either using typical hinges

or preferably using a flexible cover and hinge layer made of permanently movable, thermoplastic material, and permanently actively closes the climb-through opening automatically or by actuating the closure after climbing through.

The frame for hanging the flap of the climb-through opening is molded directly onto the plate, contains reinforcements, and the flap is made of the same material as the plate, either in the same or much lower thickness.

The cover layer of the plate on top and bottom and the lateral protection parts comprise identical or different materials and material thicknesses.

Through a deformation of the cover layers, these become supporting webs or profiles within or at the edges of the support core or are used themselves as the support core.

Within the plate or as a lateral terminus of the plate in the longitudinal direction, one or more pipes or U-profiles made of metal or fiberglass-reinforced plastic, also enclosed or molded out of perforated sheet metal, are welded in or on or glued in or on to absorb elevated loads.

The lateral edges are provided with a round, square, or rectangular pipe, a U-profile, a special extruded or roll-formed profile having grooves for receiving the upper and lower cover sheets, which are beveled downward laterally in this case.

The scaffolding plate cover continues with identical surface in one piece without interruption up to the end of the web of the claw or round groove of the suspension fitting or the two suspension fittings.

The metallic scaffolding plate cover layer is embedded in the plastic cover layer at its edges as a protection from injuries.

The web of the claw of the suspension part is positioned perpendicularly to the scaffolding plate.

The web of the claw of the suspension part is angled outward up to 45° or has a slight angle inward.

The opening of the claw of the suspension part, up to its throat, has a depth of 10 and at most 20 mm, of 20 and at most 30 mm, of 30 and at most 48 mm, or a larger

dimension.

The rounded area of the suspension groove is crescent-shaped or only partially crescent-shaped.

The web of the claw of the suspension part simultaneously supports the holding of the plate on the rising web of the holder profile through appropriate deformation.

A component of the suspension part of the plate, both for the claw and for the suspension round groove, is a holding guard engaging on the holding profile or suspension pipe.

A perforated metal plate is embedded or welded bodily enclosed permanently in a thermoplastic layer, plate, or film made of one or more layers.

In the perforated metal plate, all or only some holes of the plate have hole edge depressions.

The perforated metal cover layer has a constriction of the hole tapering conically inward on all or only individual hole edges.

All or individual holes of the perforated metal cover layer simultaneously have edge depressions and the material of the cover layer narrows in thickness toward the hole center on all or individual hole edges.

The edge depressions of the perforated metal cover layer have the height, more than the height, or less than the height corresponding to the material thickness thereof.

The edge of the holes in the perforated metal cover layer runs from top to bottom at an angle of 25 to 65° toward the hole center and is or is not flattened shortly before the opening of the hole.

The height of the downward bevel may exceed the plate thickness by up to multiple times.

From the viewpoint of the plate center, a groove is molded onto the entire plate width in front of the outer downward bevel(s).

From the viewpoint of the plate center, a semicircular or partially semicircular recess is provided in front of the outer downward bevel(s) on both sides on thinner plates and continuously on thicker plates.

The scaffold plate is provided in the main support direction with grooves, beads, and/or upward and downward bevels.

Within the plate area, the scaffold has small or large recesses, with or without plates or inserted covers of the same or lesser thickness, also bonded to the plate using elastic thermoplastic material.

Both the thermoplastic support core in direct connection and also the cover layers as intermediate layers of the welded connection to the perforated metal are manufactured from polypropylene (PP) and the plate is therefore completely recyclable in spite of the different melting points of plastic and metal.

All or individual holes of the perforated or sinkhole perforated sheet metal plate are implemented as round or square holes, oblong holes, hexagonal or polygonal holes, diamond holes, triangular holes, star-shaped holes, keyholes having rounded corners or angled, or even as other types of holes.

The scaffold plate has an area weight of up to 11, 9, or 7 kg/m² at a thickness of approximately 50 to 60 mm, an area weight of up to 10, 8, or 6 kg/m² at a thickness of approximately 40 to 50 mm, an area weight of up to 7, 6, or 5 kg/m² at a thickness of approximately 20 to 30 mm, and an area weight of up to 6, 5, 4, 3.5, or 3 kg/m² at a thickness of up to 20 mm.

The plastic cover layers having glass fiber reinforcement each weigh approximately 1.0 to 1.5 kg and are approximately 1.0 to 2.0 mm thick, the perforated metal or sinkhole perforated sheet metal cover layers in an aluminum alloy, which are bonded to plastic, each weigh approximately 0.6 kg to 1.8 kg and are 0.3 to 0.5 mm thick.

The thermoplastic support core, with or without reinforcement, weighs 0.6 to 1.0 kg/m² per centimeter of thickness.

Only a metal sheet without perforations, in identical or different thicknesses, with or without an anti-slip covering, which is primed (provided with an adhesion promoter) toward the support core, is attached on the top and bottom as the cover layer.

The finished compressed plate having aluminum cover layer is chemically treated or anodized in a selected color in the anodizing bath in the cover layers together with the

visible plastic parts.

The scaffold plate is used as a floor plate, timbering plate, wall plate, wall panel, sound protection plate, thermal or sound insulation plate, roof panel, support layer for a photovoltaic laminate or for photovoltaic cells, table or table tennis plate, bench or chair, also having molded-on and foldable legs, door, gate, or garage door, stair step, as a decorative plate and for vehicle superstructures, as well as many other products, and molded as a supporting profile.

The scaffold plate is used as a vacuum panel if a gas-permeable support core and a gas-impermeable film which encloses it are used.

A method for manufacturing a light support plate as disclosed above in a stationary plate press is characterized in that the plate is compressed from a thermoplastic support core, which determines the color of the outside of the plate, or other spacers in oversized thickness and required width and length in the middle, over which only a sheet, a perforated sheet, or a sinkhole perforated sheet is laid on the top and bottom, in a single hot press and cold press pass having temperatures for heating and cooling tailored to the different melting points of the materials and the material thicknesses in direct contact with the hot and subsequently cold plates of the press and/or the possibly required, also textured separating film(s) and is thermoplastically bonded to the panel, whose later thickness and color design are previously determined, and receives the final, depressed or raised surface structure and shape and, if corresponding molding tools are used, additional molded-on parts such as claws, grooves, and other suspension fittings, closures, reinforcement, inserts and web inclusions, edges, and holes.

A method for manufacturing a light scaffolding plate as described above in a stationary plate press, is characterized in that the plate is compressed from a thermoplastic support core, which determines the color of the outside of the plate, or other spacers in required thickness, width, and length in the middle and thermoplastic cover layers on the top and bottom, over which a perforated sheet or a sinkhole perforated sheet is laid or which are reinforced using fibers, textiles, or nonwoven materials, in a single hot press and cold press pass having temperatures for heating and cooling tailored to the different

melting points of the materials and the material thicknesses in direct contact with the hot and subsequently cold plates of the press and/or the possibly required, also textured separating film(s) and is thermoplastically bonded to the panel, whose later thickness and color design are previously determined, and receives the final, depressed or raised surface structure and shape and, if corresponding molding tools are used, additional molded-on parts such as claws, grooves, and other suspension fittings, closures, reinforcement, inserts and web inclusions, edges, and holes.

Preferably, the plates are pressed in a single pressing pass laid next to or one behind another in multiple units.

When in the above methods a sinkhole perforated metal plate is used, the liquid thermoplastic compound arising from the thermoplastic cover layer and/or the surface of the support core during the hot pressing flows through the holes, fills up the depressions in the plate, and, during the subsequent cooling, forms the solid rivets required for the bodily formfitting bond or the clawing.

When in the above methods a perforated metal plate is used, the liquid thermoplastic compound arising from the thermoplastic cover layer and/or the surface of the support core during the hot pressing flows through the holes and expands over the holes into a flat plastic layer and, during the subsequent cooling, forms the connection pins to the flat plastic layer required for a bodily formfitting bond or the clawing.

In accordance with the above methods, The stability, the modulus of elasticity, and the UV and weather resistance of the plate, in addition to the strength and the material properties of the cover layer, are influenced by enlarging or reducing the holes size and/or sinking the holes and/or through offset arrangement of the holes in the direction of the strain.

A method for manufacturing a light scaffolding plate as disclosed above is characterized in that it is performed in a continuously running extruding procedure with the honeycomb support core, with or without flattened plate surface, or a continuously running deep drawing procedure for a support core in a tubular, cap, box, web, corrugated, or similar structure, the introduction of slots in the honeycomb structure, with subsequent hot

pressing of the cover layers of identical or different thickness from the coil or as a plate in the continuous or plate press clocked method, with or without intermediate layers of nonwoven material, textile, or adhesive layers, with or without the application of depressed or raised structures or surface coatings such as a slide protection structure or perforated metal or sinkhole perforated metal or similar layers, notching slots, holes, or similar things, the subsequent edging and fitting molding and the trimming or cutting while maintaining or introducing the required, exactly controlled melting temperature at the surfaces to be fused and material underneath to be melted and subsequent cooling in the subsequent cold press, each under electronic or manual control and precise consideration of the temperature window required for the material.